AUTONOMIC RESPONSE IN POSTHYPNOTIC AMNESIA

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INTRODUCTION

Degree of posthypnotic amnesia is usually estimated from the results of recall, recognition and relearning tests. Since it is generally recognized that hypnotic procedure can less markedly influence involuntary levels of response (**4, 12**), it may be asked whether autonomic indices would provide a more sensitive criterion. It was to test this possibility that the present experiment was performed.

PROCEDURE

The *S* was an undergraduate woman student in whom deep hypnotic states had been induced on many previous occasions. She will be referred to as *S*, and the experimenters as E_1 and E_2.

E_1 drew up a list of eight common nouns and selected one of the middle six by lot.[1] He then hypnotized *S*[2], who knew nothing of the nature of the experiment, and gave the following instructions: "I am going to mention a word to you. The word is (here the critical word is inserted). When you are awakened, you will not remember that I mentioned this word to you. It will not be more familiar to you than any other word. No matter how hard you try, you will be absolutely unable to remember that I mentioned this word to you." (Repeat.)

E_2, who did not know the suggested word, questioned *S* after she was 'awakened.' He asked whether she could remember anything that had occurred and, specifically, whether she could recall any word that might have been mentioned to her. Then he read, one by one, the list of eight words and asked whether *S* recognized any of them as having been mentioned. *S*, after some thought, invariably replied in the negative.

After a 48-hour interval, during which time the word was not recalled, *S* returned to the laboratory. E_2 read the list of words once more and at the same time took physiological recordings (respiratory and cardiovascular) on a Keeler Polygraph. Sample records are presented in Fig. 1. A mark was made on the baseline with a signal-magnet as each word was read. *S*'s replies were in the negative. *S* was then rehypnotized by E_1, and, in response to his question, was able to recall the suggested word.

Several days later *S* returned to the laboratory and the procedure was repeated with a second list of words, the roles of E_1 and E_2 being reversed. Work was continued until eight tests had been made, each *E* playing each role four times. The procedure was always the same, except that each *E* selected (by chance) either his second, third or fourth test as a control. In these instances *S* was hypnotized, but no word was suggested to her.

At the conclusion of the tests, each *E* examined privately the four polygraph records which he had taken. On the basis of the criteria ordinarily employed in detecting deception (**6**), he attempted to determine which of the four records was a control and which word on each of the others was the one which had been mentioned in hypnosis.[3] If it happened that *E* was not

[1] This procedure ensured the occurrence of neutral items in the initial and final position of the series and was employed to facilitate the interpretation of the physiological recordings (*vide infra*).

[2] Depth was estimated as 20 on the Friedlander-Sarbin scale (**3**).

[3] The writers had used the 'lie detector' with considerable success on many previous occasions.

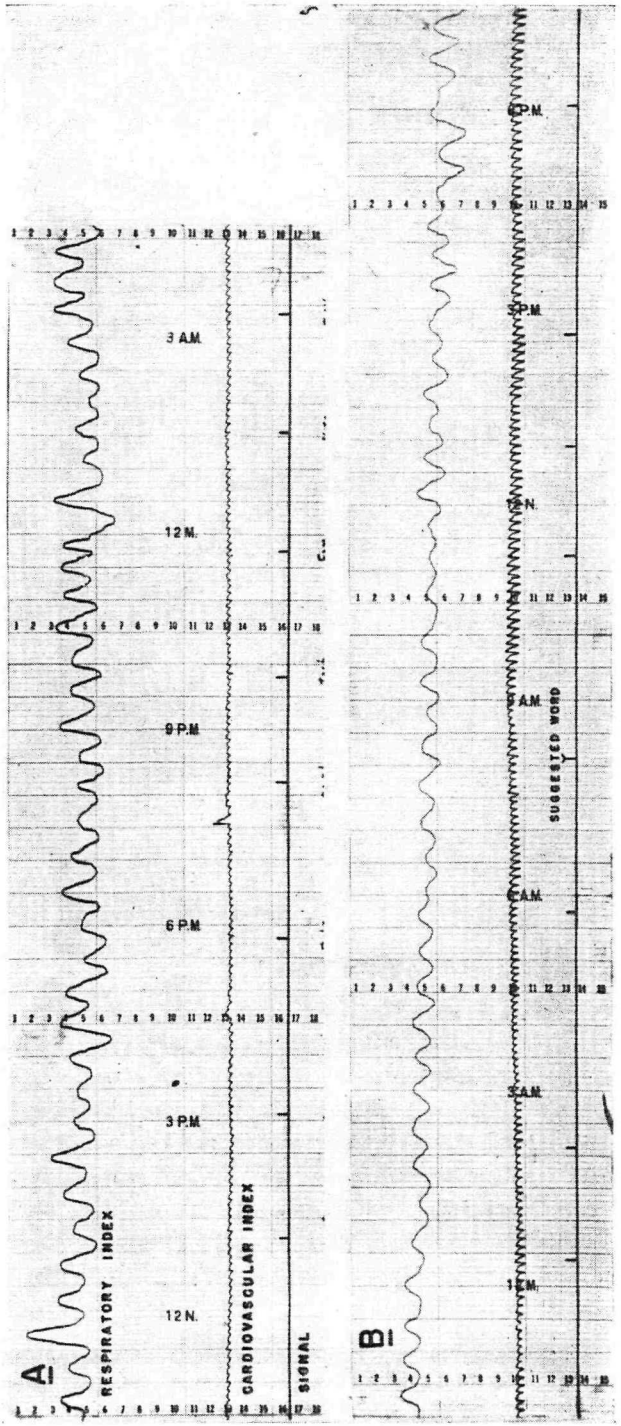

FIG. 1. Records of physiological responses during tests of recognition. *A*. Test 4 (control); *B*. Test 5.

completely certain of his interpretation, he recorded a 'second choice' along with his primary judgment. After the eight decisions had been made in writing, they were compared with notes of what actually had occurred.

Results

It may be seen from Table I that five of the eight primary judgments were correct. Four of these records (1, 4, 5, 6) were sufficiently clear that alternative judgments were not made. In the remaining

TABLE I

Validity of Judgments Based on Polygraph Records

E	Record No.	Suggested Word	E's Primary Judgment	E's Second Choice
1	1	clip	clip	—
	3	dictionary	control day	dictionary
	5	bottle	bottle	—
	7	(control day)	ribbon	control day
2	2	goal	goal	dust
	4	(control day)	control day	—
	6	pole	pole	—
	8	cover	content	cover

three cases the second choices were correct. The results were significantly better than chance ($P < .01$).[4] The two *E*s scored approximately the same degree of success despite the fact that they disagreed as to whether or not positive results would be obtained.[5]

Sample records are reproduced in Fig. 1. 'A,' record 4, is a control, and is characteristically free of differential physiological changes. In 'B,' record 5, the suggested word is indicated by a 'peak of tension' in the cardiovascular tracing, as well as by local changes (6).

Discussion

The results indicate clearly that, although the *S* was unable to recognize the critical words, differential autonomic responses occurred when these words were mentioned. Marston (8) has contended that deception is revealed by physiological changes whether or not the individual is aware of a motive to deceive, but the concept of 'unconscious deception' has little explanatory value, at least in regard to the present findings. A more satisfactory interpretation may be based upon the contradiction between instructions given the *S* in the hypnotic states, i.e., suggestions of amnesia for the critical words, and the post-hypnotic requests to make every effort at recognition. It is

[4] The writers are indebted to Professor T. A. Ryan for statistical advice.

[5] This result is significant from the point of view of those who stress the importance of operator attitude (2).

reasonable to assume that this procedure gave rise to a motivational conflict which tended to produce emotion.[6] This hypothesis appears to be borne out by the absence of marked physiological changes in the control records, and from the same point of view it might be anticipated that, if the experimental procedure were modified to the extent that the *S* is not pressed for recall or recognition of the critical words, no differential autonomic response to the reading of the lists would occur.

There has been considerable controversy in the literature concerning the degree of dissociation which can be obtained by hypnotic procedures. Hull (4) and White and Shevack (12) have minimized the possibility of producing complete dissociation, while Wells (9, 10, 11) has argued that with appropriate instruction and sufficient 'depth' of hypnosis, the absolute functional independence of dissociated processes may be achieved. Erickson (1) has found it necessary to induce 'profound' trances in order to ensure the freedom of posthypnotic behavior from the influence of waking experience.

In the present experiment complete insulation was not achieved, as evidenced from the interaction of the instructions given in the hypnotic and waking states. If in further research it is found that the physiological indicators reported here do not appear with the use of a 'profound' trance or with suitable modifications of the hypnotic instruction, the possibility of complete dissociation is strengthened, and the technique of the present experiment may be employed as a sensitive test of the degree of insulation which is achieved in hypnotic experiments. If, on the other hand, these indicators continue to appear, the results might be taken as evidence against the possibility of obtaining complete dissociation.

Summary

Amnesia for words mentioned in the hypnotic state was suggested to a somnambule. Despite the *S*'s inability to recognize or recall these words in the posthypnotic period, they could be determined from records of physiological changes which were made during tests of recognition. The relation of this finding to the concept of dissociation is discussed.

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[6] In this connection *S*'s behavior during the course of investigation is significant. She complained of dizziness following the experimental sessions and of insomnia, and she frequently failed to keep appointments. These reactions were not characteristic of *S*, but resembled behavior observed by Luria (7) and by Huston, Shakow and Erickson (5) in studies of hypnotically induced conflict. In the final hypnotic session and in the subsequent waking period the nature of the experiment was fully explained to *S*, and one week later the symptoms had disappeared.

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